Explanation of Integrated Coastal Management Graphics Used during the India Tour

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The graphics used in the presentations on integrated coastal management (ICM) are based on the project, **Baseline 2000: The Status of Integrated Coastal Management as an International Practice**. The Baseline 2000 (or B2K) project's main product was the Baseline 2000 Background Report (B2KBR). The second iteration of the B2KBR is a pdf that can be viewed and downloaded from the website, www.uhi.umb.edu/. The B2K project was funded by ICM institutions in Canada and the United States Most of the explanatory text in this document is derived from B2KBR.

Front and Back Covers.

The Western and Eastern Hemispheres depict the extreme inland extent of the world's coastal zone. All areas colored in terra cotta are lands with a drainage that ultimately flows to the sea. Approximately 75% of the Earth's non-frozen land surface ultimately drains into coastal waters and oceans. The covers are an illustration of the common observation -- and lament -- that coastal waters and the oceans are the planet's ultimate sink. The ultimate inland boundary of the coastal zone could theoretically extend back into much of the terra cotta area depicted on the covers if the concept is applied that "all lands, the uses of which have, or could have, an "impact" on coastal waters (including coastal resources and environments) should be within the coastal zone"**.** Floating plastic debris (such as the clear plastic used to bind six packs of soda or beer) can -- and does - travels from the headwaters of the Mississippi and Missouri River system --1,000 to 1,500 kilometers inland - into the Gulf of Mexico. Once in the Gulf the plastic six-pack binders have been ingested by marine turtles, often causing their demise (sea turtles mistake small floating pieces of plastic for jellyfish, a preferred food item).

The map of the world's total drainage area, comprising thousands of watersheds and drainage basins emptying into all the oceans and the seas is also an illustration of one of 13 coastal systems that are the root causes (or primary forcing factors) for the practice of ICM (see **Figure 3**). The covers are also an illustration of one of the greatest

challenges to coastal zone management; where to set the inland boundary of the coastal zone.

1. Baseline 2000's Organizing Frameworks for Information Exchange.

One of the greatest needs -- if not the greatest need -- for advancing ICM's state-of-the-art is improving the effectiveness and efficiency of information exchange (particularly in respect to learning from experience) on the international, national and the sub-national levels.

As of February 2002, the practice of ICM is learning relatively little from its 35 years of experience involving approximately 698 ICM efforts at all levels of governance, in all parts of the world, in all types of political regimes, in all types of environments, and at all levels of national economic development. ICM practitioners appear to have little time (and often facilities) for information searches and reading to find answers to specific questions that they in designing or improving their program. ICM specialists and/or coordinators in international assistance institutions are also similarly pressed for time. At present there are only a few online information exchange networks devoted to ICM -- all with limitations -- that can expedite finding specific information needed by practitioners and international assistance coordinators to design, build, revise or otherwise improve a program or project. As a result, practitioners and ICM specialists in international assistance institutions are learning only a portion of what they could learn from the more than three decades of history and rich experience of successful as well as failed ICM efforts or components of ICM efforts. This situation has two evident consequences:

- The ratio of failed or ineffective programs to successful programs is much higher than it could be;

- The same well known and -- for the most part -- avoidable mistakes are continuously being repeated and, concomitantly, ICM efforts continually fail to incorporate the information from other efforts with analogous situations on the specifics that they need for building successful programs, particularly the means to overcome the challenges confronting each stage and aspect of ICM program development and implementation (see the explanation associated with **Figures 13 and 14**).

The failure to learn from experience is exacerbated by the fact that many practitioners don't appear to believe that information from one nation or sub-national unit is of direct relevance to the practitioner's own situation. Furthermore, the literature presents relatively few lessons on overcoming challenges common to ICM. The relatively few means to overcome challenges are built mostly on non-systematic observation or hypothesis testing; observer/reporter bias is common. There is an almost complete lack of independent assessments of ICM programs.

Every ICM effort can be a learning opportunity; not just for the participants involved in the particular effort but also for ICM practitioners elsewhere who are in similarly situated circumstances, as well as ICM specialists in the international assistance community. For example, what can be learned from the terminations or transformations of many ICM

efforts. Review of the Tables on ICM efforts (See B2KBR - Annex C) indicates that approximately 25 of them have been terminated or transformed into another type of environmental management program. One can often learn more from determining why an effort failed than from assessing an effort that is merely plodding along.

Baseline 2000 was built on the assumption that both tracking the status of ICM and improving the state-of-the-art largely depends on improving global and national information exchange, particularly in respect to learning from the wealth of experience acquired over the last thirty-five years. Seven frameworks were develeoped to organize and facilitate information exchange in order to track the status of ICM as an international practice as well as improve the state-of-the-art. **Figure 1** places the seven organizing frameworks in context with the different sections of the text and depicts the connections to other components of ICM.

Seven organizing frameworks were used to establish Baseline 2000:

- Global database for ICM efforts,
- An index and networks of the issues that have commonly motivated the initiation of ICM efforts,
- An index of model planning approaches and techniques for planning and/or management,
- Comparative assessment of guidance literature,
- An index of common challenges to ICM (as well as other types of environmental planning and management),
- The application of performance assessment to evaluate and improve ICM programs,
- Global database of ICM topics.

Comparison of **Figure 1** to **Figure 2** (Elements Involved in Managing Coastal Resources and Environments) and its explanatory text should clarify the relationships and interconnections depicted.

The global database of ICM efforts is a key-organizing framework, as depicted by **Figure 1.** The information from this database of ICM efforts is derived from all the other boxes shown on **Figure 1**. It also provides information to all boxes shown in the Figure. The global index of topic areas relevant to ICM is expected to be the other key-organizing framework. It is the last organizing framework presented in this Report since it has a reciprocal connection with all the other boxes in **Figure 1**.

Figure 1 also depicts that "Literature relevant to ICM" has a reciprocal connection to all the other boxes. The literature box encloses only three topics: Guidance literature (See B2KBR - Section 7), Common challenges to ICM achievement (See B2KBR -Section 8), and Measuring ICM efforts and performance indicators (See B2KBR - Section 9). The

"et cetera" in the literature box is meant to indicate the obvious: the literature relevant to ICM includes many more than the three topics (as outlined in B2KBR's Section 10 and Annex H). These three topics are organizing frameworks.

Section 2 in B2KBR highlights a number of dimensions and aspects of the world's coasts that affect the planning and management of its resources and environments at all levels of governance -- as well as to provide a context for the B2KBR's seven organizing frameworks.

This Report clearly shows that further work is needed to develop each of the organizing frameworks in order to make each of them fully operational -- and thereby -- achieve their potential to improve the practice of ICM. Proposals will have to prepared in order to obtain funding to complete information input into each framework and make it operational and easily accessible to ICM practitioners, ICM specialists in international assistance institutions and specialists in fields or interests directly relevant to the practice. The frameworks were developed (by means of design and the inputting of information) far enough to achieve the objectives of Baseline 2000.

1. Elements Involved in Managing Coastal Resources and Environments.

All nations and semi-sovereign states -- expect those presently in anarchy or near anarchy (e.g. Angola, Cote d'Ivoire, Somalia, Liberia, Sierra Leone, Iraq, and the Democratic Republic of Congo) -- at least manage (or attempt to manage) at least one coastal resource and its associated users (such as fisheries and fishers). The full spectrum of coastal resources management -- from management of just one coastal resource (such as fisheries) to the preparation and implementation of an ICM effort -- involves five discrete elements. These five elements are all interconnected into a very dynamic and system. **Figure 2** portrays these five elements and the system they form. To reiterate, the system portrayed in **Figure 2** applies to all levels of governance that attempt to plan or manage one or more coastal resources. **Figure 2** is not just specific to any or all units of government that are engaged in ICM efforts.

In **Figure 2** the coastal systems box is the only element printed in red. The coastal systems (see **Figure 3**) set ICM apart from all other types of integrated environmental planning or management. The other four elements in **Figure 2** are inherent to all types of environmental planning and management efforts including national conservation strategies, integrated rural development, or the integrated planning and management of river basins, mountain ranges, desert systems, or great plains. The coastal issues box is printed in purple as well as placed in the center of the graphic to illustrate that it is both a combination of the three elements in blue and the systems oval in red (blue and red create purple) and it is the keystone (or the hub) of an ICM effort or any other type of integrated environmental planning and/or management effort.

Issues

The precise boundaries of a coastal zone for an ICM effort depend on the nature of the issues that the effort was created and designed to resolve. For example if a major issue is recreation, tourism, and public access the inland boundary may not have to go further inland than a half-mile from the shorelands or coastline (see **Figure 4**). A half-mile is the maximum distance most people are willing to walk to reach a recreational attraction on the shorelands or at the coastline. By contrast, if a major issue is the adverse impacts of non-point source pollution, the inland boundary -- at least for planning purposes -- should include all those lands -- the use of which, is polluting or may significantly pollute coastal waters.

The motivating issues are the anchor point of an ICM effort because they directly connect to almost all the program's components: the goals and objectives, setting coastal zone boundaries, the identification of the stakeholders who should be involved in program preparation and implementation, the determination of information and research needs, the design of the institutional arrangement, and the design of the monitoring and evaluation framework.

Uses and stakeholders

Coastal uses are utilization of coastal resources or environments for one or more of the following purposes: economic, recreation, aesthetic, education, science, religion, and culture. It is obvious that coastal systems and environments do not manage themselves, they react to both the natural and the anthropogenic forces upon them. ICM is about managing a society's (as expressed by an aggregation of stakeholders) direct impact, indirect impact, or cumulative impact on coastal systems and environments. **Figure 2** illustrates that stakeholders are an essential element in the coastal management and planning system.

Stakeholders are individuals, organizations, or groups that have a vested interest (i.e. a social or economic stake) issue's outcome. Usually the issues are uses competing for the same resource (e.g. coastal abutting properties), use of a coastal resource (e.g. over-harvesting of a fishery) or the adverse (off site pollution) or beneficial (e.g. the visual quality afforded by coastal agriculture) impacts of one or more coastal uses upon one or more other coastal uses.

ICM is largely a practice of conflict resolution and environmental mediation. Most of the motivating issues for an ICM effort are conflicts among stakeholders. Many of the techniques commonly used in ICM such as impact assessment, permit letting, and land use plans are means to resolve conflicts among stakeholders. Effective conflict resolution requires a conception of public policy and decision making in which key stakeholders (including donor institutions, governmental agencies, and non-governmental organizations) have the opportunity to negotiate. The goal is to move away from a strategy of policy and decision making that produces winners and aggrieved losers, and moves towards one that generates mutual gains.

Institutional and governance arrangements

An institutional arrangement is a composite of laws, customs, budgets, staffing, and governance structure that are established by a society to allocate scarce resources among the competing interests of stakeholders. If a nation, or sub-national unit, has established a regime to manage even one its coastal resources or uses (e.g. fisheries, beaches, sub-tidal lands, or port areas) it has an institutional arrangement that involves the coast. The arrangement may be only on paper -- such as laws that are ignored. The arrangement does not have to be specific to the coast, such as a nationwide pollution control law.

A key component of an institutional arrangement for an ICM effort is the specific governance arrangement used for planning and management. **Figure 10** presents a typology for making comparative assessments of governance arrangements used by ICM efforts.

Planning approaches and planning and management techniques

The governance arrangement for ICM uses planning and management approaches and techniques to resolve the motivating issues. An approach is a sequential process and series of steps used to derive a plan to resolve one or more issues. Planning and management approaches -- such as permit letting, land use planning, and protected areas - are commonly included as an institutional arrangement. However, because of the importance approaches and techniques hold in the practice of ICM, they have their own box in **Figure 2**.

Institutional arrangements and planning and management approaches as well as many of the techniques have a number of: 1) Common aspects (e.g. inter-sectoral and interdisciplinary), 2) Principles (e.g. individuals, groups, or institutions significantly affected by a policy should partake in its formulation and implementation), 3) Components (e.g. applied research), and 4) Approaches (e.g. flood plain management) and 5) Techniques (e.g. impact assessment).

3. Thirteen Systems that Influence Coastal Management.

ICM was created -- and has been sustained -- by the necessity to plan and manage coastal systems. For example, the first two ICM efforts were for planning and managing bay-estuary systems (San Francisco Bay in 1965 and Port Phillip Bay [Australia] in 1966). One of the major lessons learned from the history of ICM is that horizontal and vertical integration among government units are necessary if coastal systems are to be effectively and efficiently planned and managed. It is the coastal systems that largely determine the quantity, quality and distribution of coastal resources and environments. **Table 3** is a listing of 13 systems that -- individually or in combination -- have shaped the great majority issues that have motivated the initiation and preparation of ICM efforts (See **Figure 9A** and **9B**).

A basic concept of ICM is that the planning and management of coastal resources and environments should be done in a manner that is based on the physical, socioeconomic, and political interconnections both within and among the dynamic coastal systems. It is the coastal systems in context with the motivating issues that when aggregated together, define a coastal zone (as reiterated by **Figure 4**).

Another characteristic of most of the 13 coastal systems listed in **Table 3** is that they combine into at least nine types of moderate to large-scale coastal geographic systems. These are: 1) Semi-enclosed seas (e.g. Bay of Bengal), 2. Enclosed seas (e.g. Baltic Sea), 4) Lakes and landlocked seas (e.g. Lake Victoria, the Caspian Sea), 5) Non-estuarine bays (e.g. Gulf of Kachchh), 6) Estuaries and lagoons (e.g. Chilika Lagoon), 7) Islands (e.g. Andaman Islands), 8) Atolls/coral reefs/lagoons (e.g. Lakshadweep Islands), and 9) Large deltas (e.g. the Ganges). ICM efforts have been directed at all these types of coastal geography. Most of these types have one or more information exchange networks (e.g. periodic conferences, newsletter, or website).

A definition of integrated coastal management is a:

> multidisciplinary process that unites levels of government and the community, science and management, sectoral and public interests in preparing and implementing a program for the protection and the sustainable development of coastal resources and environments. The overall goal of ICM is to improve the quality of life of the communities that depend on coastal resources as well as providing for needed development (particularly coastal dependent development) while maintaining the biological diversity and productivity of coastal ecosystems in order to achieve and maintain desired functional and/or quality levels of coastal systems, as well as to reduce the costs associated with coastal hazards to acceptable levels.

4. Types of Coastal Areas and Zones.

Figure 4 shows the relationship between a coastal zone and various types of coastal areas. **Figure 4** also displays the set of options for delineating the inland and ocean boundaries of a coastal zone. According to the Figure, a coastal zone of minimum breadth includes; nearshore waters, a coastline, and coastlands. The Figure also indicates that the maximum width of the coastal zone would be from the oceanward boundary of a nation's exclusive economic zone (the greatest distance is 200 nautical miles from the coastal base line) or the oceanward boundary of the continental shelf and slope – whichever is greater to the inland limit of coastal watersheds.

The inland extent of coastlands varies. Several criteria are used to define the immediate and apparent connection to the coastline, depending on the public purpose the coastland area is intended to address. The following five criteria are a synthesis of standards drawn from U.S. coastal states' programs, Australian states' programs, and U.K. programs.

- For **public access**, easy walking distance to the shore -- usually 300 to 500 meters -- is often the key determinant. A longshore dimension is often included, to provide for lateral access along the shore.

- **Hazard avoidance** programs are often established in reference to bluffs, flood-prone areas, or areas with historic landslides.

- **Protection of sensitive habitats**, such as wetlands, unstabilized dunes (those not stabilized by woody vegetation).

- **Water quality protection** is achieved through setbacks for installation of septic tanks, and zones to keep natural vegetation along shores and banks – both to control erosion and to retain the natural filtering capabilities of this vegetation. In this case the first tier of lots inland from the shore may be a logical coastlands boundary.

- **Visual protection** of the coast is often accomplished with a coastland zone defined in reference to the first public road paralleling the shore. Retention of natural vegetation along the shoreline is often a key element of such programs.

A distinction needs to be made for the waters directly adjacent to the coastline for this is the location of most conflicts among water space users. In **Figure 4** this area has been termed nearshore waters and extends oceanward approximately 100 meters from mean low tide or to the four meter isobath, which ever distance offshore is greater. Many activities compete and conflict in this area, including; water contact recreation, surfing, jet skiing, boating, docks, boat moorings, marinas, port facilities, navigation aids, coral and rock mining, shore-line erosion control structures, aquaculture, surf fishing, and shore seining.

The most common inland boundary mark is a uniform distance such as India's 500 meters from mean extreme high tide. The most common oceanward limit of the coastal zone is the boundary between the jurisdiction of a coastal state (or province or region) and the national jurisdiction -- which is usually in the range of 3 to 12 nautical miles. This is the state waters bar in **Figure 4.**

Small island nations or sub-national units present a specific problem in setting the inland boundary of the coastal zone or area. An analysis of island ecosystems defines small islands as environmental units that do not have an "interior hinterland or central core area that is essentially distant from the sea". The study concluded that approximately 10,000 square kilometers -- about the size of Jamaica -- is the breakpoint between small and large islands. In an island of less than ten thousand square kilometers, there is no point that is more than a one hour drive from the sea, and one could argue that the entire island is a coastal zone. Coastal zone management on small islands is essentially synonymous with nation-wide or state-wide management.

5A + B. ICM Efforts and Composition.

ICM has proliferated over the past three and a half decades in respect to the total number of efforts, the total number of nations and semi-sovereign states (SSS) and the extent of global distribution. ICM is now practiced in all parts of the world and it is readily incorporated into part of the pervasive, international rhetoric on "sustainable development".

In 1993, a roster was prepared of ICM efforts at the national and sub-national levels. The search included all coastal nations with the exception of those in the US's 30 coastal states. The roster also did not include international efforts (define as efforts based on consensual agreements among nations). The 1993 roster indicated there were 142 ICM national and sub-national efforts in 57 coastal nations (with exception of the US) and SSSs.

The 1993 count of 142 ICM efforts did not include the 20 international efforts and the 55 ICM efforts in the U.S. at that time. Adding these two numbers to the 1993 total produces a sum of 217 ICM efforts. In 1993, approximately 75 nations and semi-sovereign states were involved in ICM at the national and/or sub-national levels.

Table 5 is a summary of the database of ICM efforts. The numbers in the Table are derived from the four Tables that constitute Annex C in B2KBR.

- Table C-1: ICM Efforts at National and Sub-national Levels, (except Canada and the U.S.A (455 efforts as of 28 February, 2002). 58 pages.
- Table C-2: ICM Efforts in Canada (57 efforts as of February 2, 2001). 7 pages.
- Table C-3: ICM Efforts in the United States (110 efforts as of February 28, 2002). 15 pages.
- Table C-4: International ICM Efforts (76 efforts as of 28 February, 2002). 13 pages.

Table 5 indicates that at the beginning of 2002, 145 coastal nations and SSSs have initiated approximately 622 ICM efforts at the national and/or sub-national levels. In nine years, there has been almost a tripling of national and sub-national level ICM efforts (217 to 622), as well as almost a doubling in the number of nations and SSSs that have become involved with ICM (75 to 145) at the national and/or sub-national levels.

Has ICM become something of a sustainable development fad – particularly among the international assistance institutions? When will this growth rate taper off? Another perspective is that to a large extent, the increase in numbers is attributable to the increase in data available on the Internet, as well as the momentum and skill of creating useful and informative websites. Many ICM efforts either existed or were in the pipeline in 1993 but could not be found without laboriously contacting many institutions by phone, fax, or in-person. Furthermore, the total of ICM efforts now includes lakes of international significance and land-locked seas. **Table 5** lists12 efforts in these two

categories, as well as 26 lakes that are shared by two or more nations, but without a notation (i.e. evidence) that there has been – is, or will be - an ICM effort.

Both the total number of efforts at the national and sub-national levels, as well as the number of nations and semi-sovereign states with ICM efforts, may increase when more ICM practitioners, as well as ICM specialists in international assistance agencies, have had an opportunity to review B2KBR's Tables C-1 and C-4. However, the numbers could also decrease because: 1) a number of efforts may never have actually occurred, 2) there may be double counting (it appears that a number of efforts may be a simple extension of an existing effort vs. a new phase such as program implementation), and 3) a number of the efforts do not fit the criteria of an ICM study, project or program. The text associated **with Figure 11** outlines the difficulties of drawing the line between what is, and what is not an ICM effort).

The primary purpose of the database of ICM efforts is to provide a means of inter-connecting ICM practitioners, staff in international assistance organizations, and specialists in topics directly relevant to ICM, who are all addressing coastal issues with an integrated approach (both vertical and horizontal integration). The primary purpose of the database is not to keep an accurate count of ICM efforts. Therefore, it is not imperative to make an exact separation between what is, or is not an integrated coastal management effort. Other types of environmental planning and management efforts, such as marine protected areas or nation-wide integrated environmental action plans, commonly address many of same issues in the same ways as ICM efforts. Updating the count of ICM efforts (both additional efforts, as well as efforts that have terminated or transformed), and determining the nations involved in ICM, as well as the composition patterns of both efforts and nations is an important, but secondary, benefit of the database.

Findings from Table 5 as well as B2KBR's Tables 3.2, 3.3, and Annex C.

There are great variations among ICM efforts. "Numbers can be deceiving" is a common statement in the field of analysis. In the Tables of ICM efforts for example, the California Coastal Management Program (CCMP), the Bluenose Atlantic Coastal Action Program (BACAP) in Canada, and the Exe Estuary Partnership in the U.K. are all given a "one" in the count of efforts. Although these efforts are counted in the tally as equals, they represent a spectrum with respect to the two major indicators that are commonly used to make comparative assessments among institutions; the resources and authorities (or powers). In respect to these two indicators; the CCMP is at the top end of the spectrum, the BACAP is well below the middle, and the Exe Estuary Partnership as at the low end of the spectrum. The wide variation among ICM efforts in respect to powers and extent of geographic jurisdiction (another important comparative indicator among institutions) is the topic of **Figure 10**.

The California Coastal Management Program was enacted by law in 1972. Over the last 29 years, the California Coastal Commission (CCC), the executing institution of the CCMP, has spent approximately $174 million (USD) to prepare and implement its Program. The number of the Commission's full time paid staff has varied between 110 and 150 over the last 29 years. The extent of the CCC's powers includes the approval, denial or setting conditions on any significant development proposal within its

geographic jurisdiction - which can extent up to five miles inland. The CCC also has the powers to require all local units of government that border on the coast to prepare and implement a Local Coastal Plan (LCP). These LCPs must be prepared according to the Commission's very specific regulations and guidelines. The Commission also has the powers to approve or deny LCPs or make recommendations about changes that must be made in order produce an acceptable LCP.

The Bluenose Atlantic Coastal Action Program (BACAP) was created as an NGO in 1993 and has no legal standing. The staffing is two full-time employees who are supported by dozens of volunteers, and the total budget expended over the past nine years has been approximately $1.5 million (USD). BACAP can only advise and inform government units with regulatory or planning powers.

In 1995, the Exe Estuary Partnership (EEP) was formed. It employs one full-time officer, who is occasionally given administrative support from partner organizations. Students assist with the research and, over the past 4 years, the Partnership has spent approximately $180,000 (USD). Like the BACAP, the EEP has only advisory "powers". The staff member offers advice to a Joint Advisory Committee and a number of statutory and non-statutory stakeholder organizations associated with the Exe Estuary.

It should be noted that an institution, despite very limited powers and resources, may be more effective and efficient in achieving the same objective than an institution with broad regulatory powers and extensive resources. For example, the Exe Estuary Partnership may be more effective in the conservation and/or restoration of its one estuary when compared to the California Coastal Commission achieving its mandate to conserve and/or restore any one of the very many estuaries within its very large jurisdictional area.

Between 1973 and 2000, all but one of the world's sovereign coastal (oceanic) nations have, at one time or another, participated or are participating in one or more international ICM efforts - at least on paper. B2KBR's Table C-4 indicates that there have been 76 efforts for planning and/or management of international open coastal "seas" (e.g. Gulf of Guinea), enclosed coastal seas (e.g. Baltic Sea), international land-locked seas (e.g. Caspian Sea), international gulfs (e.g. Gulf of Fonseca), and lakes of international significance (e.g. Great Lakes and Lake Baikal).

It is important to make a distinction between ICM efforts at the national and/or sub-national levels and international ICM efforts. The former, with few exceptions, are coastal zone management efforts that involve a significant commitment of money, staff resources, and time by the nation or the sub-national unit to prepare and implement a program that resolves the motivating issues. By contrast, international ICM efforts are consensual agreements among nations. Consequently, they have little or no monitoring and enforcement powers or even modest funds for program monitoring and evaluation. Consequently, for most of the international ICM agreements (particularly the 13 Regional Sea Action Plans initiated by the UN Environment Programme (UNEP) to which 127 nations are participants at least on paper), there is almost nothing to loose for a nation to be a participant, and there should be something to gain.

The benefits for a nation to be a signatory on a UNEP Regional Sea Convention and/or Action Plan include: 1) Acquiring useful information about its sea or seas, 2) Increasing

the capability of its scientists in conduct coastal and ocean related research, 3) Increasing the amount and quality of applied ocean and coastal sciences research and inventory in its EEZ and/or territorial waters, 4) Sensitizing stakeholders (particularly the ruling elites) about the values of its sea(s), as well as the present level of degradation of environmental quality and resources, 5) Receiving technical assistance and grants for projects such as pollution control, ICM pilot or demonstration area efforts, establishing marine or coastal protected areas, and recovery plans for rare and endangered species, and 6) Attending international meetings and workshops, as well as networking among peers and colleagues. There appear to be only two downsides of being a signatory to a UNEP Regional Sea Convention or Plan and not making any significant commitments or actions to achieving its objectives: 1) Acquiring a bad reputation among the signatories of the international effort that are making significant commitments and actions to achieve the objectives of the Action Plan and 2) Preclude or decrease, perhaps to zero, the six benefits just enumerated.

A comparison of B2KBR's Tables C-1 to C-4 indicates that twenty-six coastal nations of the 127 nations that have participated in one or more UNEP Regional Sea Programmes do not have an ICM effort at either the national or the sub-national level. This fact appears to be a function of one or more of the following three situations:1) The nation has no compelling socioeconomic issues that could be effectively resolved by an ICM effort (**see the text associated with Figures 13 and 14**), 2) The nation does not have the governance capacity necessary to prepare, much less implement, an ICM effort (see B2KBR's Section 8.3), or 3) A nation chooses not to use ICM as a means to resolve one or more compelling nation-wide or region-wide coastal issues (see the Introduction to Annex C in B2KBR). For example, a number of small island states have chosen to resolve coastal issues by means of a National Environmental Action Plan.

The great majority of international ICM efforts usually have had woefully inadequate budgets. As to be expected, the numerous limitations and constraints of international coastal ICM efforts have created the situation that many, if not most, efforts have been ineffective attempts to resolve their motivating issues. It was also inevitable that a number of international ICM efforts are now either moribund or have been discontinued.

In many coastal nations, particularly large ones, the focus of ICM is at the sub-national level. Delegation of a national ICM program to one or more sub-national units offers numerous advantages. The three most evident ones are the ability to: 1) Tailor national policies and guidelines to fit and accommodate local variations in environmental and socio-economic conditions, 2) Address the specific priority issues of concern to stakeholders at the local level, and 3) Enable and encourage local stakeholders to buy-in to the preparation and implementation of local coastal plans. **Table 5** indicates that there are over three times as many ICM efforts at the sub-national level (481) than efforts at the national level (140). The ratio of sub-national efforts to national efforts would further increase if all the coastal plans prepared by local units of government were included in B2KBR's Tables C-1, C-2, and C-3.

More than one-third (223) of the efforts focus on bays, estuaries and lagoons. The first two ICM efforts in the world where focused on bays – San Francisco Bay and Port Philip Bay. Enclosed coastal water bodies are more visible to stakeholders than open coasts. They are also more visible as a cohesive planning and management unit than

open coasts which lack geographic definition. Most of the major cities in the world are located on bays, estuaries or lagoons since they provided natural harbors and well situated transfer points for the movement of cargo. Given the urban concentration that is common around enclosed water bodies, there is a much higher concentration of multiple use conflicts than on open coasts. The very enclosure that characterizes these water bodies makes them far more sensitive to inputs of pollution than open coasts where circulation is not constrained by topography. Despite the fact that there are over two hundred ICM efforts focused on bays, lagoons, and estuaries, there is also no global ICM information exchange network for the planning and management of these enclosed coastal water bodies.

A significant number of ICM efforts focus on islands. Table 5 indicates that 99 efforts have focused on small island nations or semi-sovereign island states. The Tables in Annex C indicate that 35 small island nations or semi-sovereign states are, or have been, involved in these 99 efforts. Relatively small islands are essentially wrap-around coastal zones, and are therefore appropriate for ICM programs if they have been extensively developed and have motivating issues. Large islands such as Jamaica, Cuba, and New Guinea are sizeable enough to have inland bio-geographic areas that have relatively few direct and significant impacts of coastal resources and environments. Two notable exceptions, however, are non-point pollution and river flooding, particularly in the area where the river and the coast interconnect.

The number of ICM efforts on small islands would be significantly higher if ICM had not been precluded or incorporated into many islands' nation-wide or statewide comprehensive environmental planning programs (such as national or state environmental action plans). On small islands, ICM objectives, concepts, approaches and techniques can in theory be easy folded into a nation or statewide comprehensive planning program. This point is addressed in the introduction to B2KBR's Annex C.

Since 1990, developing nations as well as developing semi-sovereign states have accounted for the great majority of the increase in the number of nations and SSSs involved in ICM at the national and/or sub-national levels. Table C-1 in B2KBR's Annex C indicates that 99 developing nations (including countries in transition from communism to democracy and capitalism) have now initiated one or more ICM efforts at the national and/or sub-national levels. The total number of national or sub-national efforts in developing nations now stands at 284 or 45% of the total number of such efforts in the world.

With only a few exceptions, all ninety-nine developing nations or states received substantial support (usually as non-reimbursable grants) from the cadre of multi-lateral and bilateral international assistance institutions (e.g. World Bank, Inter-American Development Bank and Canadian International Development Agency) for the initiation and preparation of an ICM effort. Developing nations commonly obtain international assistance to support implementing the ICM effort. The support for implementation, however, often is provided as a loan and not as a grant.

The international regions and continents on which developed nations are concentrated have a disproportional large percentage of ICM efforts at the national and sub-national levels. This disparity is illustrated by B2KBR's Table 3.3

(Regional Distribution of ICM Efforts). In respect to ICM efforts at the national or sub-national levels; Europe (133), (North America (167), and Australia (46) have a combined total of 346 efforts, or 49% of the 698 global total. If the total efforts of the USA (104), Canada (57), Australia (46) and the United Kingdom (45) are combined, the total is 252 or 36% of the 698 global total. In comparison, the nations with the next largest numbers of efforts are: Philippines (18), Indonesia (13), Mozambique (10), Ecuador (9), India (9), South Africa (9) and Brazil, Mexico, Malaysia, each with 7. It is reasonable to expect that the archipelagic nations of Indonesia and Philippines would have a relatively large number of ICM efforts.

The 1993 Roster of ICM efforts had the same skew of ICM efforts to developed nations and those international regions and continents in which they are located. B2KBR's Section 8.2 lists most of the reasons why developing nations and semi-sovereign states - as well as international regions or continents in which the are located - have disproportionately fewer ICM efforts.

Clearly, the two best indicators of the relative amount and intensity of ICM activity and actions by a nation/SSS, or by an international region, or by a continent, is: 1) The cumulative commitment of resources (e.g. budget, time period, competent professional staff, technology, and technical assistance) and, 2) A summarization of the powers and jurisdictional areas of the efforts in a nation/SSS, or in a international region, or in a continent. Without both of these indicators, a global database of ICM efforts will fail to capture the real global geo-politic of the practice, nor be able to provide the information necessary to assess program performance and effectiveness (see B2BK's Section 9).

Approximately 55% of the ICM efforts at the national and sub-national levels (exclusive of the 110 efforts in the USA) have reached the implementation stage. In the U.S., the implementation level reaches 95%. The high implementation rate in the U.S. is a function of both the thirty-six year time span to develop and implement the efforts, and the continual Federal support for program implementation. However, as B2KBR's Section 9 points out, there is very little information on the extent to which efforts in the implementation stage are achieving their objectives with respect to measurable, on the ground, accomplishments. The fact that an ICM effort is going through the implementation process, such as issuing permits, approving local land use plans, and designating marine protected areas, does not necessarily mean that these actions are resolving the motivating issues.

6. Major Integrated Coastal Management Programs in the U.S.A.

The U.S. government has four programs that focus on integrated coastal zone management**.** These are depicted in **Figure 6**. Three of the programs (in blue colors) are administered in the National Oceanic and Atmospheric Administration (NOAA) and, consequently, there is a high degree of integration and mutual support among them. The fourth effort, the National Estuary Program, is administered by the Environmental Protection Agency (EPA). Since EPA and NOAA are separate line agencies (EPA is a stand-alone unit and NOAA is a unit within the Department of Commerce) coordination for a united national ICM effort is often more on paper than a reality.

The U.S. Coastal Zone Management Act (USCZMA) was passed in 1972. **Figure 6** indicates that there are three major phases in full development of a state's or territory's coastal zone management program (CZMP): preparation, approval, and implementation.

The USCZMA does not mandate the nation's 34 coastal states and territories to participate in the program. However, thirty-three of the thirty-four coastal states and territories have participated because there are two incentives for them to do so. One incentive is funding to both prepare a state or territory CZMP and to implement the program. Between 1972 and 2002, the U.S. Federal Government has disbursed over two billion dollars to the coastal states and territories to prepare and implement their CZMPs. The other incentive for the states and territories to prepare a program is that once it is approved by the Federal government, all Federal activities have to be consistent with the state's or territory's CZMP.

The "Federal consistency" provision of the USCZMA is a strong incentive to states and territories since national government agencies have control over so many activities in the coastal zone. The United States' federalism arrangement gives the national government many broad powers to initiate programs and actions within all the states and territories. The actions and programs include the construction of sewage and water treatment plants, harbor improvements, dredging navigation channels, control of development in flood plains and in wetlands, the creation and planning/management of protected areas (e.g. national parks, seashores, estuary research reserves, marine sanctuaries, and fish and/or wildlife refuges), construction of highways, and impoundments, the permit-control of any proposed development in navigable waters, the permit-control of any discharge into navigable waters, and planning and management of fisheries.

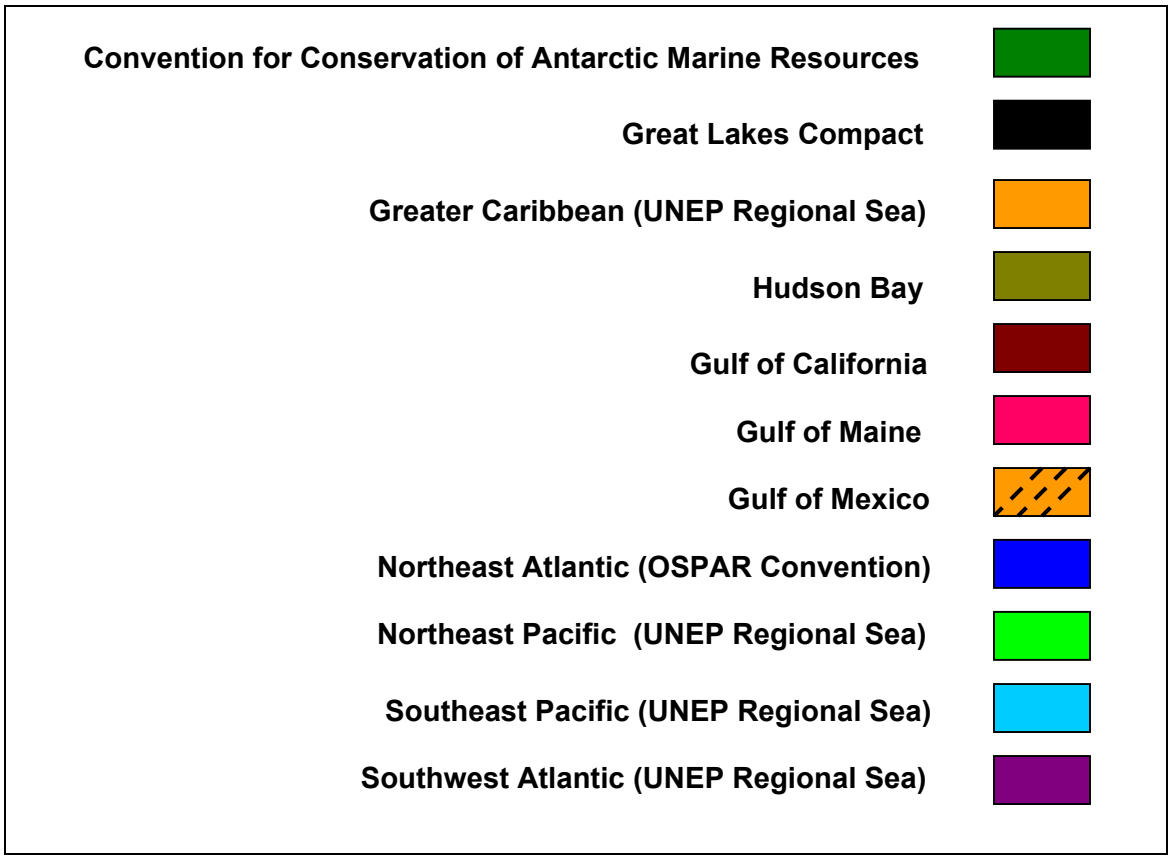
The USCZMA specified that the Secretary of Commerce approves (or rejects) a state's or territory's CZMP program because NOAA, as mentioned, is in the Department of Commerce.

A provision of the USCZMA created the National Estuary Research Reserves (NERR) Program. The major purpose of NERRs is protection of estuarine environments for long term research, water quality, monitoring, education and coastal stewardship. At present, there are 26 NERRS. One of the major criteria for the selection of NERRs is to have representation in each of the USA's 11 coastal bio-geographic regions.

The National Estuary Program (NEP) was created in 1987 to improve the quality of estuaries of national importance. To date, 28 national estuary programs have been established in 17 states and one territory. EPA provides one million to a state or territory to prepare a Comprehensive Conservation and Management Plan (CCMP) for each designated estuary. The Director of the EPA must approve the CCMP prior to its implementation. The major weakness of the NEP is that EPA does not provide the states of territories with funds to implement the CCMP.

7. International Efforts for Coastal Seas – Western Hemisphere.

Figure 5 indicates that there are 22 ICM efforts that focus on enclosed coastal seas, usually at the international level. **Figure 7** depicts the location of 11 efforts in the Western Hemisphere and **Figure 8** depicts the location of 12 efforts in the Eastern Hemisphere.

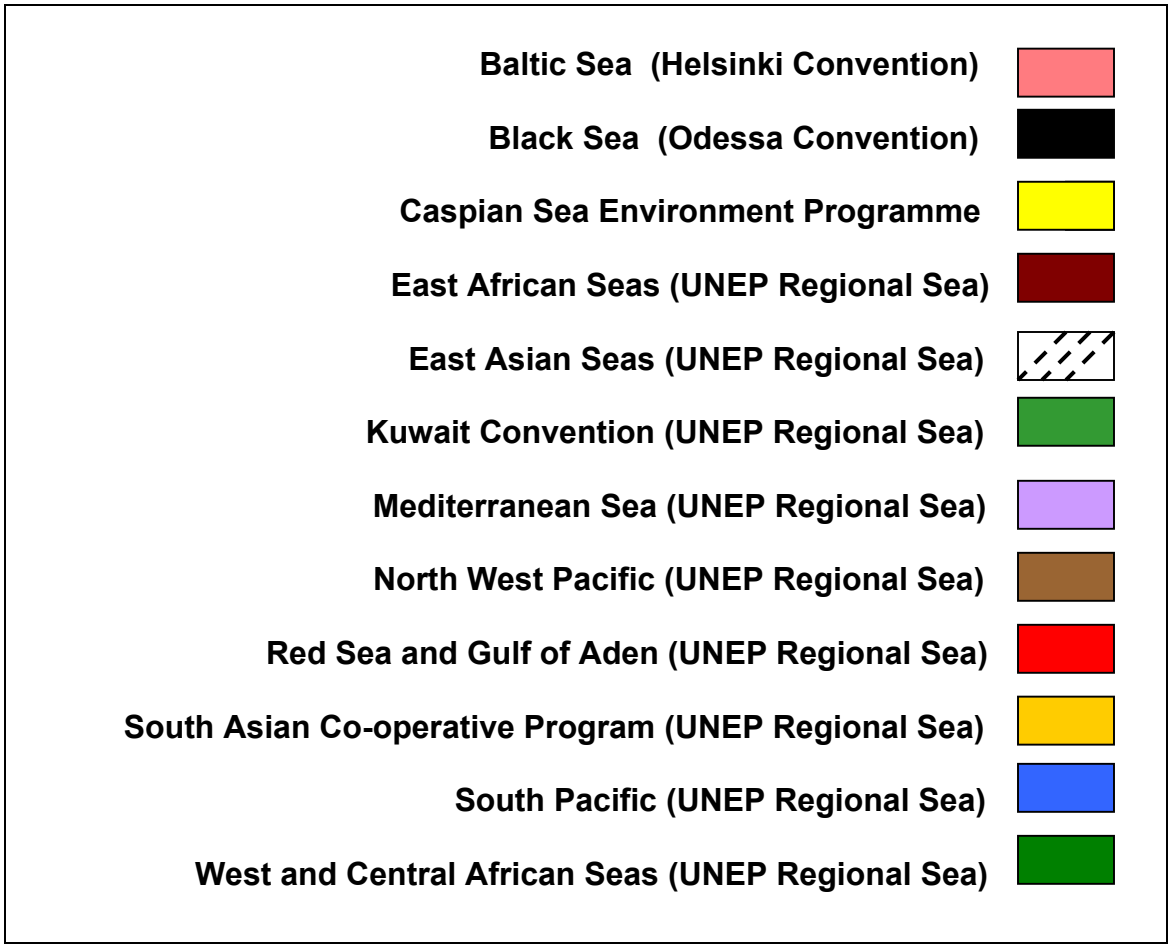


In a future iteration of the **Figure 7** another four efforts for international coastal seas or large embayments will be added (either as colored areas or as point location). These are: Gulf of Fonseca, Gulf of Honduras, Lake Titicaca, and Puget Sound and Georgia Basin.

8. International Efforts for Coastal Seas – Eastern Hemisphere.

In a future iteration of **Figure 8,** at least 22 international efforts for coastal seas or large embayments will be added (either as coloured areas or as point location). These include: Aral Sea, ArcManche, Argulhas Current (Large Marine Ecosystems Program "LMEP"), Barents Sea, Bay of Bengal (LMEP), Benguela Current (LMEP), Gulf of Guinea (LMEP), Irish Sea Forum, Lac Leman (Geneva), Lake Chad Basin, Lake Malawi, Lake Tanganyika, Lake Victoria, North Sea, Red Sea Coast, Rio Plata,

Skaggarek Forum, Somali Current (LMEP), South and East Africa Coastal Area Management Program, Sulu and Celebes Seas (LMEP), Trilateral Wadden Sea Plan, and the Yellow Sea (LMEP).



9A + B. Major Coastal and Marine Issues in the Next Ten Years.

The specific problems and development opportunities that have motivated the initiation and the preparation of the great majority of ICM programs are very similar around the world. This similarity in motivating issue occurs despite the considerable variation among coastal nations in respect to socioeconomic and environmental conditions, geographic and climatic factors, laws, and institutional arrangements (see Section 4). The term, motivating issues, is commonly used to include: problems (such as adverse environmental impacts), development needs and opportunities, and socioeconomic needs (see B2KBR's Section 4 and Annexes D and E). The word issue is also commonly used in the ICM literature to describe the challenges (or impediments) usually encountered in the processes involved in an ICM effort, usually in the steps of program initiation, adoption, preparation, implementation, or evaluation. In this report these kind

of issues are termed process issues – and are a topic in B2KBR's Section 8. An outline of the "process issue" challenges is presented in **Figures 13A, 13B, 14A, and 14B.**.

Two years ago the World Conservation Union (also know as the International Union for the Conservation of Nature and Natural Resources or IUCN) requested a presentation on major coastal and marine issues confronting the world over the next ten years. **Figures 9A and B** outline ten global issues. The first two issues are particularly pertinent to developing nations and the remaining eight are common to all nations with the exception of issue F, increasing demand for tourism development in the tropics. In the next ten years there will be an ever increasing demand for coastal recreation and tourism development in almost all coastal nations and SSSs. However, the demand will be greater in tropical counties both because of the climate attraction and the attraction of palm lined sandy beaches, clear nearshore waters, and coral reef systems. The tropics' physical attractions are also more sensitive to adverse impacts than the nearshore waters and coastlands in temperate climates. Adverse impacts of tourism and recreation development in the tropics will also be greater because the great majority of nations in the tropics have developing economies. The text for **Figures 14A, and 14B** explain why developing nations are far more likely suffer the adverse impacts of development than developed nations.

Figures 9A and B are designed to be read from left to right. The left column lists the ten major coastal and marine issues in the next ten years. Each issue generates a number of impacts. In the middle left column the impacts are depicted as one or two sequential changes in the environmental conditions or changes in development pressure. The middle right column connects environmental condition changes or types of development pressure to one or more of the ten terminal effects. A particularly interesting aspect of **Figures 13A, 13B, 14A, and 14B** is that all 10 issues eventually connect with only 10 types of effects. These 10 effects in turn can be connected to changes in socio-economic conditions. For example, "reduce, loss, or collapse of fisheries can be measured in terms of employment losses or decline or loss of fishery associated industries (e.g. processing, boatyards), and reduction in protein and food supply to a society - be it nationwide effect or more localized effect on a sub-national unit such as a state, region or communities. The figures also illustrate the cause and effect linkage between "reduction, loss or collapse of fisheries" and "reduction in food security and malnourishment" as well as the cause and linkage between "contaminated fishery products" and increase in disease. The figures also link two effects with two of the ten issues. Reduction, loss, or collapse of fisheries is one of the main reasons why mariculture development is increasing around the world. Reduction or loss of tourism attraction leads to tourism development in areas where the tourism offering has not been degraded (as yet).

10. Types of ICM Efforts Based on Regulatory and Planning Area.

Over the last twelve years, a number of practitioners and academics have sought a typology (or organizing framework) that would delineate comparative strengths and weaknesses among ICM governance arrangements. An international review of ICM

efforts at the national and sub-national levels indicates two important variables that can be used to make comparative assessments among ICM governance arrangements:

- Regulatory and planning boundaries, **and,**

- Reliance on planning, or on regulation, or a combination of planning and regulation**.**

In respect to regulatory and planning boundaries, **Figure 10** presents four divisions (or tiers) that have commonly been used by ICM efforts. **Figure 4** explains each of these tiers in more detail.

- **A. Coastal waters:** the area measured oceanward from a tidal and/or tidal influence mark and/or salinity mark to an offshore boundary.

- **B. Coastline (shoreline):** generally, the area between mean high and mean low tides. A number of ICM efforts have expanded this area by extending it ocean-ward to average extreme low tide and extending it inland to the average limit of extreme high tides and/or coastal flooding and/or the inland extent of beach and/or dune vegetation (i.e. to the oceanward extent of permanent vegetation).

- **C. Immediate coastlands** (also called shorelands): the area extending landward from the inland limit of the coastline to a uniform distance (such as 500 meters) or a variable distance depending on the issues. In ICM efforts, the uniform distance inland varies between 8 and 1,000 meters in order to achieve one or more of the following benefits: provide long-shore and cross-shore public access, provide a public recreation area with exceptional amenities, control pollution of coastal waters (e.g. septic tanks), protect, restore or enhance visual quality, or reduce/prevent the costs associated with shoreline erosion (the retreat option).

- **D. Interior coastlands:** the area in which land uses can have a direct and significant impact on coastal resources or environments. Ideally the inland limit would be all the lands in a coastal watershed -- the use of which would have a direct and significant impact(s) on coastal waters.

The division of a coast into four tiers enables the distinction between an integrated coastal management program (ICM) and an integrated coastal zone management effort (ICZM). ICM is the most inclusive name for the management of coastal waters and/or coastlines, and/or coastal lands. The jurisdiction of an integrated coastal management effort can include planning and/or regulation of just the coastal waters, or just the coastline, or just the immediate coastlands. ICM can also include the planning and/or regulation of two, three, or four adjoining tiers. By contrast, an integrated coastal zone management (ICZM) or coastal zone management program (CZM) must include three tiers: a coastal waters area, the coastline, and at least the immediate coastlands area.

The four tiers depicted in **Figure 10** should be placed in context with legal boundaries (as set by international conventions or national laws), as well as boundaries not set by

law or international conventions but commonly used around the world. This is illustrated in **Figure 4.**

The second factor depicted by **Figure 10** is the extent to which an ICM or ICZM effort is involved in regulation and/or planning. Four distinctions are made:

- **1.** Integrated direct regulation only (e.g. Spain's and Turkey's program),
- **2.** Integrated planning and **direct** regulation (e.g. Great Barrier Reef Marine Park Authority [GRMPA] and many of the state CZM programs done under the USCZMA),
- **3.** Integrated planning and **indirect** regulation (such as state CZM programs in Connecticut, Florida, and Massachusetts), and
- **4.** Integrated planning only (such as the planning program for the Venice Lagoon and watershed and UNEP's Regional Sea Action Plans).

The distinction between direct and indirect regulation is whether the lead unit of government directly issues permits for proposed coastal development or depends (i.e. indirect) on permit letting by other agencies in order to implement its ICM of CZM plans and policies. In the U.S., a CZM program with indirect regulation by the lead agency is commonly referred to as a networking arrangement.

Figure 6.1 produces the following nine types of ICM or ICZM efforts:

1. Integrated direct regulation **only** of the immediate coastland, the coastline and inshore waters (e.g. Spain and Turkey).
2. Integrated planning and direct regulation of only the coastline, inshore waters, and an offshore area (e.g. the Great Barrier Reef Marine Park Authority),
3. Integrated planning and direct regulation of the coastline and all coastal waters to the limit of the Exclusive Economic Zone (e.g. Netherlands program for managing its total ocean area, which is the same as its EEZ),
4. Integrated planning and direct regulation includes only the coastline and immediate coastlands and integrated planning only extends into the interior coastlands. No regulation or planning for inshore waters (e.g. Costa Rica),
5. Integrated planning and direct regulation extends across the immediate coastlands, the coastline, and into the coastal waters and integrated planning only extends into interior coastlands (e.g. Israel, Washington State, and the San Francisco Bay Conservation and Development Commission [SFBCDC], and Sri Lanka), and
6. Integrated planning and direct regulation extends across all four tiers (e.g. California, Fraser River Estuary, North Carolina),

7. Integrated planning and indirect regulation extends across all four tiers (e.g. Connecticut, Florida and Massachusetts),

8. Only integrated planning extends across all four tiers (e.g. Brazil, Venice Lagoon, the Baltic Sea Program, and Priority Action Plans of the Mediterranean Regional Seas Programme), and

9. Integrated planning extends only from the coastline into coastal waters (e.g. most of the UNEP's Regional Seas Programs).

In **Figure 10**, it should be noted that in types 3, 4, and 5, there are ICM efforts that are listed twice in different parts of the diagram. The efforts that are located in two places in **Figure 10** are in ***italics font***. The placement in two parts of the diagram and in *italic font* indicates that the ICM effort has a split between tiers where it has regulatory and planning authority and another tier or two where it only has integrated planning authority. There are three types of splits: 1) Direct regulation of the coastline and immediate coastlands (e.g. Costa Rica) or 2) Direct regulation in coastal waters and the coastline (e.g. GBRMPA) or 3) Direct regulation of coastal waters, the coastline and the immediate coastland and only integrated planning in interior coastlands (e.g. Washington State) with the exception of GRMPA, that conducts only integrated planning in both the immediate and interior coastlands Another type of governance arrangement (for a total of 10 types) could be added for ICM efforts that only plan and regulate the coastline usually for erosion and flood control. An example is shorelines management in the Canadian Great Lakes.

This proposed typology, like almost all typologies, has limitations. The listing of nine types of ICM governance is based on only two variables. As the text with **Figures 13 and 14,** - points out, there are many more variables that influence the success and failure of ICM efforts. For example, one of the most important differences among ICM efforts is the scope and powers of direct regulation, particularly permit-letting. A few programs require a permit for all significant development in their area of direct regulation (e.g. California Coastal Commission and the GBRMPA). It is much more common, however, for exemptions to be made in direct regulation for projects of a small size or a particular type of development, such as agriculture. Washington State, for example, exempts single-family houses in the immediate coastland (200 feet inland from MHT) from obtaining a permit. In North Carolina, agricultural development is usually exempt from the State's CZM regulation.

Despite the limitation of using only two variables to create the typology, it can be used to make comparative assessments of the some of the important strengths and weaknesses among different governance arrangements used by ICM efforts. Clearly, a governance arrangement that can only engage in integrated planning, but does not have direct or indirect regulatory authority to implement their plans and policies, have had -- and will have -- implementation problems, such as UNEP's Regional Seas Programme.

Furthermore, a governance arrangement that has direct regulatory authority should have greater potential for having their plans and policies implemented than institutions that must rely on the regulatory authority of other institutions (the network approach).

However, an analysis of the perceptions of the performance of state coastal zone management programs in the United States indicated that there was no significant difference in performance between networking states (type 5) and states with programs based on a single comprehensive coastal law (type 6).

ICM efforts -- such as in Turkey and Spain -- that rely only on direct and/or indirect regulation and do not engage in integrated planning can not adequately manage coastal systems -- particularly the control of cumulative impacts. Planning is also needed as the means to build community-based support for a program.

11. Integrated Coastal Management Planning and Management Options.

The Tables of ICM Efforts in 2BKBR now include any effort with a title or brief description that indicates the focus was - is - or will be (i.e. in the pipeline) - an integrated coastal and/or ocean management/planning project or program (or an extensive inquiry/study or recently enacted law). These then, are self-proclaimed efforts, and consequently a number of them may prove to be just wishful thinking, empty promises, or paper exercises. However, making lists of efforts recorded in the literature and/or websites is the only way to start building a database. In B2KBR Annex C, the entries with a question mark were not included in the total count of ICM efforts or the total count of coastal nations. Each effort with a question mark will be contacted to establish their existence and status. The great majority of the 698 national and sub-national listings in Annex C are real efforts, not just a name since they are well known projects or programs that are connected with a well-recognized institution(s).

B2KBR's Section 3 mentions the continual (and inherent) challenge is distinguishing an ICM effort from either:1) Broad scope sectoral planning/management or 2: Comprehensive environmental planning/management. Traditional sectoral planning combines forecasting and implementation for capital investment, land use planning, and infrastructure needs for specific sectors of a national economy. Those sectors with greatest economic relevance to coastal management are port planning, fisheries/mariculture, and tourism. Given the close dependency of tourism and fisheries sectors on a sustainable natural resources base, a consideration of habitat and environmental quality factors must be integrated with other aspects of sectoral planning to make the effort successful. Recognizing the importance of environmental factors in sectoral planning/management, government units have taken steps to include them in sectoral planning of a broader scope. Broad scope sectoral planning also includes assessment of the interconnections with other sectors.

Broad scope sectoral planning represents a marginal change from the usual status quo of sectoral planning and management. Since institutions tend to make only marginal adjustments when confronted with a need for change, broad scope single sector planning is the most likely management strategy to be implemented. Broad scope sectoral planning often serves as a transition to integrated coastal management approaches. If an agency broadens its horizons to assess the full range of impacts associated with its projects, and

this wider perspective produces a net benefit to the agency, this positive experience should make the agency more amenable to taking the next step to an ICM program.

The major disadvantage of broad scope sectoral planning is the perpetuation of non-integrated, single purpose programs. Interest in ICM may be diverted by broad scope sectoral planning, even though the ICM approach would be more effective in resolving coastal issues.

Three optional institutional arrangements and the distinctions among them

Figure 11 depicts the three common options used by nations, sub-national units, or SSSs have used to resolve coastal issues. The selection of the letters A, B, and C to distinguish among the three options has no meaning either in respect to priority or to relative frequency. As illustrated in **Figure 11**, all three options include sectoral planning/ management, broad scope sectoral planning/management, or a combination of both.

Option A. Comprehensive environmental planning program (such as a National Environmental Action Plan) or Comprehensive Planning with environmental planning as an integrated component. Common examples are Town and Country Planning in the U.K and most of the British Commonwealth nations and SSSs. At the present time, B2KBR's Annex C usually does not include efforts in which ICM has been totally, or almost totally subsumed into a nation-wide, state-wide, or sub-state comprehensive planning/management program. The exception is a comprehensive planning/management program for small island nations or SSSs.

Option A is the arrangement that appears to be the one most commonly employed by small island nations or and SSS resolve coastal issues. It is difficult, if not impossible, to set an inland boundary for the coastal zone for small islands. As pointed out in B2KBR's Section 3, small island nations or states are essential a coastal zone that has been wrapped around the island's entire terrestrial lands and coastal waters.

There are many continental coastal locations that have incorporated ICM into their comprehensive environmental planning and management program or into their comprehensive planning and management program. Examples are; the Cape Cod Commission and the Cape Cod Plan and the Long Island Regional Planning Authority and its various land use and zoning plans. .

The inclusion of Option A programs into B2KBR's Annex C - particularly general comprehensive plans and programs - requires additional funding to cover the considerable amount of time to identify such efforts because of both their vast number and determining the extent to which each effort has - or does not have - policies, plans and powers to adequately address and effectively resolve all the significant coastal management issues that occur within the unit of government's area of jurisdiction.

Option B. Comprehensive environmental planning program (such as a National Environmental Action Plan) or Comprehensive Planning with ICM as a distinct component. Well-known examples of this option are the coastal counties in the U.K

(e.g. Cornwall, Devon, Dorset, Durham, Essex and Kent) that have created an ICM component within the context of the county's (and their respective local coastal councils) Town and Country Planning and Management Program. The State of Oregon (in the USA) has a state-wide law that requires all local governments to prepare and implement a land use plan its associated zoning ordinances. The local land use plans and its associated zoning ordinances are prepared and implemented according to the state's specific objectives and policies. The city and county governments on Oregon's coastal zone have an additional set of policies to follow and specific objectives to achieve. The Oregon approach is one of the three means specified by the U.S. Coastal Zone Management Act of 1972 that states or territories must use to implement their CZM program.

The second iteration of B2KBR's ICM database will include more national and state environmental planning/management programs that have ICM as an integral but distinct component. Particular attention will be used to identify Option B efforts in small islands nations and SSSs.

Option C. A separate (or stand-alone) ICZM Program or Project. In this option the ICM effort is not a distinct component of a comprehensive environmental planning and management program or subsumed into a general comprehensive planning and management program. Some notable examples of this arrangement are: Canada's Atlantic Coastal Action Program and its 14 "local" Management Programs or Projects, the California Coastal Commission and the Coastal Management Program, the Costa Rican Institute of Tourism and the Planning and Management of the Marine and Terrestrial Zone, Sri Lanka's Department of Coastal Conservation and the National Coastal Zone Management Program, the Great Barrier Reef Marine Park Authority and the Strategic Plan and Zoning of the Great Barrier Reef, and in the Federated States of Micronesia, the Pohnpei State Environmental Protection Agency and the Pohnpei Coastal Resources Management Plan.

Distinguishing between Options A and B and between Options B and C.

Figure 11 indicates that a decision is needed at points 1 and 2 to determine whether the ICM effort is an Option A, B, or C, approach. Distinction 1 between Options A and B has been – and should be -- relatively easy to make. Either there is a separate section (containing objectives, policies, and the specific means [such as land use plans and zoning] to resolve the significant coastal issues confronting the governance system) within the general comprehensive planning/management effort or the comprehensive environmental planning/management effort (Option B), or there is not (Option A).

Making the distinction (indicated by number 2) between whether an ICM effort is Option B or C is, generally, is not a difficult decision. In Option C, the stand-alone integrated coastal management effort, usually has most - or all - of the following components.

- A law or specific decree (usually from the executive head of the government [e.g. president, prime minister, king] or a specific mandate from the government's legislature, or a combination of both, that is specific to the initiation, preparation and implementation of an ICZM plan or program,

- The law or decree specifies the governance arrangement (particularly the lead institution) which has the specific responsibility for initiating, preparing, and implementing the coastal zone management plan and/or program,

- A set of goals and objectives that coastal zone management plan and/or program should achieve,

- A jurisdiction area for planning (usually the landward and oceanward boundaries of the coastal zone),

- Regulatory powers (usually on an interim basis) to control proposed development in the coastal zone or jurisdictional area,

- A deadline, or series of deadlines, for the completion of the plan or program for review and a decision by the executive head of government and/or its legislature to act upon its adoption, rejection, or recommendations for revisions in order to produce a program and or/plan that could or might be adopted, and,

- A budget for at least the initiation, preparation and of the program and/or plan. In developing nations and SSSs the total budget or the majority of the budget is provided by one or more multilateral and bilateral international assistance institutions, (e.g. the Global Environmental Facility, the World Bank, Asia Development Bank, UNDP, USAID, SIDA, ODA, or DANIDA).

In **Figure 11**, decision point 3 is the difficult distinction between what is an ICM effort and what is a broad scope sectoral planning and management effort for a coastal related sector (such as coastal and marine protected areas, fisheries, point and non-point coastal pollution, coastal tourism and recreation, or coastal hazards). For example, many plans and management arrangements for a single sector such as marine protected areas are now done with a multi-sector perspective (such as a combination of bio-diversity, fishing, and eco-tourism) and should be included (and are included) as an ICM listing in the B2KBR's Annex C and a future database. Furthermore, practitioners involved in broad-scope planning and management of coastal related sectors should be included in ICM information exchange networks since much -- if not most -- of their information needs and/or their information resources are directly pertinent to practitioners operating in "recognized" ICM programs. Once again, the primary purpose of a online, interactive database of ICM efforts is international information exchange, **not** monitoring the number or dynamics of ICM efforts, an important -- but secondary -- benefit. Given this primary purpose, for those coastal nations or SSSs for which an ICM effort could not be verified (in other words there would be no effort listed for the nation or the SSS), the policy was to identify either a comprehensive general planning and management program or a comprehensive environmental planning and management program that may have either subsumed the ICM approach or included as a defined component. This policy at least provides a contact point to the nation or the SSS to determine in B2KBR's next iteration if a bona-fide ICM effort exists, has occurred, or is in the pipeline.

12. Program Evaluation Components.

Evaluating or assessing the performance of public programs and projects - such as ICM - is a reflection of the international trend among many developed nations to re-invent governance. National governments in developed nations and international donor institutions are becoming increasingly intent on determining that their investments in an effort -- such as an ICM project or program -- are wisely and effectively fulfilling the intended purposes of the effort.

The well-developed academic field and practice of program assessment and evaluation makes three basic semantic distinctions: inputs, outputs and outcomes. These three distinctions are portrayed in **Figure 12**. Funding is usually the most common and most significant input to an ICM program. For example NOAA has estimated that it has spent over two billion dollars on implementing the USCZMA.

A review of ICMM evaluations indicates that most assessment focus on outputs (*e.g.* plans, permits, meetings, publications) and there is very little -- or no -- assessment on the outcomes, (e.g. long term changes in behavior of user groups/individuals, reaching desired levels of coastal water quality, providing adequate public access, affording sufficient protection of rare and endangered species, maintaining sustainable fisheries or, initiating or increasing sustainable tourism, or empowering local communities to sustainability manage their coastal resources and environments).

Approximately a decade ago concern began to grow within NOAA that the periodic evaluations they are required to do on the implementation of each state's coastal zone management program were too process and output oriented.

In 1995 NOAA carried out a national effectiveness study to assess the "on-the-ground-effectiveness" of the USCZMA. The "National Effectiveness Study" was done between 1995 and 1997. The methodology, findings, conclusions, and recommendations of the National Effectiveness Study are condensed into a special issue of the **Coastal Management Journal**. One of the key conclusions of the study was that there are seven major obstacles in the development and implementation of a framework for monitoring and evaluating ICM performance and outcomes (or impacts):

a) Lack of consensus on the indicators to be used to measure specific outcomes;:

b) The absence of baseline data on the indicators at the time the ICM effort was initiated,

c) The absence, or the poor quality, of time-series data on the indicator (an extension of b);

d) The inherent difficulty in modeling many types of cause-and-effect relations (such as the sediment impacts on an estuary and its associated flora and fauna from clear cutting forests in the estaury's watershed),

e) The number of years needed for on-the-ground effects (outcomes) to become apparent,

f) Determining causation (i.e. determining the extent to which the ICMM effort was responsible for the outcome being measured, as opposed to other programs, and/or the dynamics of natural systems, or externalities, beyond the control of the program,

g) The time and money required to conduct the assessment (usually a function of a, b, and f),

h) Negative expectations by supporters of the ICM effort or concern that an outcome assessment will reveal negative and damaging information and therefore provide ammunition for ICM opponents to try to kill or cripple the effort.

Because of the difficulties associated with outcome assessments, a hybrid form of assessment and evaluation has been created by evaluation experts-- Management Capacity Assessment. It has been used to assess the adequacy of management structures and governance processes as these relate to generally accepted standards and international experience. The purpose of Management Capacity Assessment is to improve project design and adjust the internal workings of a project or a program. This step-by-step process is clearly presented in: A Manual for Assessing Programs in Coastal Management. The manual is available from the Coastal Resources Center at the University of Rhode Island (www.crc.uri.edu).

13. Common Challenges to ICM and to Developing Nations.

ICM is a long and tiring swim against a continuous current of political and socio-economic interests with short-term visions, usually tending to protect the status quo. Program initiation, preparation, adoption, and implementation invariably will take far longer and require far more financial and non-financial resources than originally expected and planned.

After thirty-five years of ICM efforts around the world, the practice has developed a reasonably good understanding of the approaches, key principles and guidelines, frameworks and techniques for organizing and implementing programs, and it is beginning to benefit from collective experience. However, in comparison to other forms of planning and management, ICM - in the Year 2003 - is faced with a rather extensive list of challenges that must be overcome, if ICM, as a distinct form of environmental planning and management, is to produce desired outcomes that are needed in our coastal zones.

Figures 13A and B list the 18 challenges that are common to all units of government that engage in ICM. The challenges are clustered into four groups: 1) Information and predictability, 2) Costs and benefits and incidence to stakeholders, 3) Institutional and legal arrangements, and 4) Distribution and access to power.

Figures 14A and B list the challenges that are common to developing countries. The listing explains why there are so few successful ICM programs and projects in developing countries and semi-sovereign states. One could conclude from reading all the challenges confronting developing nations that there is little hope in the near future that the great preponderance of failures in these countries will decrease.

Most of the challenges common to developed and developing nations are also common to good governance for all public sectors (e.g. health care or education). In the following listing, the challenges to good governance in general are marked with an asterisk. Many of the challenges are specific to environmental planning and management (no asterisk).

None of the challenges are specific to ICM, with the possible exception that the practice involves planning and managing the greatest number of physical systems, as well as some of the most complex environmental systems in existence (such as estuary dynamics).

Challenges to <u>all</u> nations and sub-national units of government

Information and predictability

- **Modeling complex systems in order to make adequate impact assessments.** There is usually inadequate time series data, as well as an absence of appropriate accurate predictive models, to assess with reasonable certainty: the potential impacts of development proposals, the consequences of alternative planning or management policies, or to monitor and evaluate completed or ongoing programs and projects.*

Costs, benefits, and their incidence among stakeholders.

- **The "tragedy of the commons".** Many coastal resources are common property (such as fish, coastal aquifers, and coastal waters) and therefore selfishly exploited without appropriate regard for other users, or for maintaining a level of sustainable use.

- **Placing socioeconomic values on not-directly-measurable qualities** (e.g. rare and endangered species, bio-diversity, and esthetics). These not-directly-measurable qualities are usually benefits. Non-quantifiable benefits are usually at a disadvantage -- or dismissed -- at public policy and decision-making meetings when they are compared with the costs that are usually directly measurable and have evident political implications (e.g. employment, tax base, income generation).

- **The incidence and significance of benefits and costs among stakeholders**. Usually the costs are large and significant (such as a reduction in property value or diminished profits anticipated if proposed coastal development were allowed) to a small number of influential stakeholders [commonly elites]. By contrast, the benefits are usually spread broadly to the public at-large and/or to relatively non-influential stakeholders (since they are usually not organized into institutions with skillful lobbying capabilities).

- **The disparity in the flow and appearance of costs and benefits over time.** Costs are usually immediate (such as loss of existing or potential employment) and benefits that usually takes years to become evident (such as rebuilding a fishery or an endangered species' population). *

- **Elected governments' reluctance to consider costs and benefits beyond their term in office**. Many -- if not most -- of the benefits from integrated environmental planning and management take many years to demonstrate results that the public can readily see and appreciate, such as reforested watershed or mature mangrove plantations. ICM - like integrated environmental programs, in general - do not have

the immediate “turn key effect” of a highly visible structure or products -- such as politicians gathered around for a photo opportunity as they flip the switches that release the water from the new reservoir and through the new dam built to create it.

- **Lack of high-level support for ICM -- particularly in terms of powers and budget --**because the benefits of the effort are not conveyed in compelling socioeconomic terms that resonate with the interests of voters and the officials they elect.

Institutional and legal arrangements

- **Vague and/or contradictory language in laws, decrees, or regulations**. Vague and/or contradictory language in enabling acts often create programs with objectives that are not sufficiently specific to establish indicators for monitoring and evaluating programs and projects. *

- **The laws and regulations are inadequate** to provide the ICM program with: 1) An institutional arrangement that can achieve all the necessary dimensions of integration, 2) A set of clear, measurable and non-conflicting objectives to resolve the motivating issues, and 3) The necessary powers and budget to resolve the motivating issues. *

- **Inadequate annual budget.** The government’s annual budget making process provides the ICM effort with funds that are far lower than requested in order to adequately prepare and/or implement the effort.

- **The ICM institutional arrangements and resources are not adequate** to break through empire-building and competitive strategies by sectors of government and their supporting stakeholders who perceive that ICM threatens their vested interests.*

- **Weak cross-sectoral institutional arrangements.** Government units at the same level of governance oppose the loss or diminution of powers to the ICM program.

- **Over-reliance on the command-and-control approach for program implementation.**

- **Laws to protect private property rights constrain planning and implementation options**

- **Planning is fragmented into arbitrarily-politically established geographic areas**, especially without adequate regard to the boundaries and dynamics of environmental systems (e.g. watersheds).

- **Lower levels of government oppose the loss or diminution of powers to higher levels in which the ICM program is located.** In the USA, most of the states have delegated land use planning and management (e.g. development permits) to local governments. USCZMA required states to assume control over local governments’ land use and management programs. In the great majority of states opposition by local government units (and their associates such as real estate brokers and home

builders) was the greatest challenge to overcome in the preparation of an acceptable CZMP.

Distribution and access to power

- **Pro-development institutions have far greater access to decision-makers and policy-makers than do pro-conservation groups and institutions.**

- **Pro-development institutions usually dominate over pro-conservation institutions in public fora** since they can afford to pay staff and hire experts to continually represent their interests at public and private meetings. *
- **Laws to protect private property rights constrain planning and implementation options.**

- **Laws, procedures, and costs deter public interest groups from taking actions to enforce environmental protection and quality laws**.

Additional challenges that commonly occur in developing nations and newly industrialized nations.

Demographics

- **The nation's governance capacity is severely constrained by many and often deep divisions among its population** (e.g. race, religion, ethnic group, linguistic group, socio-economic class, or desire for regional autonomy). *

- **Basic human survival needs (e.g. adequate food, adequate shelter) for the most impoverished populations often preclude almost any attempts to conserve coastal resources and protect coastal environments.** Furthermore the impoverished classes (particularly squatters) often can find space to build their "shelters" only in hazard prone areas (e.g. steep hillsides prone to landslides, river flood plains, or immediate coastland areas that are periodically swept clean by ocean born storms).

- **Increases in population among the lowest income groups nullify socioeconomic and environmental gains achieved by planning, management and development improvements**.

The culture of decision-making and the implementation of decisions

- **The governance is dominated by a relative small group of elites who control the majority of the nation's capital and productive land.** *

- **The governance has a closed culture of decision-making that is run by the elites who actively discourage open and transparent decision-making.** *

- **Absence of a free press as well as access to "public" information.** *

- **High illiteracy rates limit public understanding of, and involvement in, governance.** *

- **Relatively little decentralization of power to lower levels of governance,** particularly the local communities and/or resource users, who usually ultimately determine the success or failure of sustainable development efforts. *

- **Many or most governing elites are concerned with maximizing short-term profits and not with the benefits that will accrue from resources conservation over the long term. ***

- **Environmental issues are a low priority among the governing elite compared to all the development opportunities that will increase their family's and friends wealth and power.**

- **Many forms of corruption strongly influence all aspects of governance, particularly decisions made in "the public interest."** Government service is seen mainly as an opportunity to gain power and wealth *

- **Little or no tradition with establishing and sustaining democratic institutions** (such as public participation arrangements) and practices (e.g. public hearings) that may threaten the status quo. *

- **Small and relatively weak or no non-governmental organizations for conservation and sustainable development** since they have -- or will -- threaten the status quo. Furthermore, it is against the law in many "peoples democratic" nations to establish any type of NGO that is only within the nation. Usually in such nations, international NGOs - such as IUCN and WWF - are allowed to have project offices but not to form or support a semi-autonomous constituency organization within the nation. Obviously in nations where either: 1) NGO's are closely monitored so that they do not openly demonstrate or speak out against the initiation of programs or projects that will have evident and significant adverse environmental, socioeconomic, and equity impacts or 2) An autonomous or semi-autonomous NGO can not be formed, it is difficult, if not impossible, to form a large and broad based constituency for natural resources conservation and the protection of naturally functioning ecosystems, as well as sustainable development.

- **Lax enforcement of and compliance with laws and regulations, particularly those that adversely affect elites.** *

Institutional capacity

- **Government institutions responsible for environmental quality and natural resources conservation were largely created at the behest of one or more members of the international assistance community**. These national or sub-national institutions are relatively weak and powerless compared to the much older, well staffed, and politically well-entrenched units of government that advocate

development which will benefit their own bureaucratic self-interests as well as the elites and the status quo. Also since the institution was created with donor funds, once this infusion ends, the country can not afford +/or does not want to support it. *

- **Weak or no cross-sectoral institutional arrangements, and therefore no successful analogs or capability building in cross-sectoral integration.**

- **Difficulty in hiring competent in-country staff because of low pay and poor working conditions.** Individuals with needed skills and education go abroad for education and experience and usually stay abroad ("brain drain"). *

- **Difficulty in hiring competent and skilled in-country program managers** (low wages and/or inadequate education/training).

- **Over-reliance on the skills and inputs of foreign consultants.** The foreign assistance program does not build adequate local capacity to sustain the program when donor assistance is decreased or withdrawn -- and the foreign consultants leave the country.

- **Lack of appropriate technology required for planning, management, monitoring and evaluation** (e.g., GIS, equipment and laboratory for water quality and pollution assessment) and/or staff capable of using it and/or maintaining it. *

Information base

- **Land tenure is difficult to establish, survey and map.**

- **Absence of basic valid information needed for planning and management** (e.g. topographic contour maps, or appropriate, valid water quality and pollution data, or demographic data).

The list of challenges in developing nations provides a very clear demonstration of why ICM efforts usually spend considerable time and resources on building institutional and professional capacity. In many programs the resources expended on resolving the issues that motivated program initiation are drained away for capacity building activities. Capacity building takes time, particularly if it is community-based. Capacity building usually requires a long term involvement of ICM practitioners with the local coastal stakeholders so that: 1) They "own" the ICM planning and management arrangement since it was built on community consensus and, 2) They have a very good understanding why their local ICM plan is in their families' and communities' best long term interests.

The list of challenges also explains why there are so few - if any - successful ICM self-sustaining efforts in developing nations, particularly after international assistance is phased down or terminated.

One true test of the worth of an ICM effort is the willingness of government units (national, state/provincial, regional, and/or local) to fund the program if and when external assistance funds are phased out.

Almost all public policy programs make compelling arguments about how a significant increase in budget would result in an effective and efficient achievement in program objectives. Compared to national and international budgets for many worthy objects such as family planning or city and regional planning, the ICM program usually has a comparatively small budget (when measured at either the national or international level). There are a number of reasons for ICM's budget despair.

The ICM community has not made a compelling socioeconomic case for its needs to individuals and organizations that control or strongly influence the funding of the ICM program.

The ICM community has not developed a performance assessment process and system that can place the program in a higher standing than competing programs. There has been a general reluctance to constructively work with the private sector to produce joint gains in sustainable development projects and programs. At a national or a sub-national level, it is usually difficult - and often nearly impossible in developing nations - to organize and maintain a large and multi-interest influential support constituency for ICM.

Salt water is not glue that can join all the stakeholders that have a vested interest in coastal resources and environments. It will always be a challenge to find the common ground between stakeholders with vested interests in the non-sustainable development and exploitation sectors (e.g. ports, oil and gas, intensive tourism, mariculture, large scale commercial fisheries, and hazard protection works) and pro-conservation stakeholders that promote sustainable development and protected areas. Furthermore, within most of the coastal-oriented sectors there are deep conflicts such as among different types of fishing operations, between industrial and artisanal fisheries, between commercial fishing and sport fishing, between "hard" and "soft" approaches to coastal erosion and/or flood control, among different types of coastal tourism, and between uses allowed in protected areas. Coastal waters and coastlands are, in fact, ideal incubators for breeding conflicts among stakeholders. Salt water is, in fact, a solvent.

ICM is not appropriate for many nations or states

One or more politically compelling, environmental or socioeconomic conditions are needed in a nation or sub-national unit as a precondition for initiating and preparing an ICM effort. In many coastal nations or sub-national units, an ICM effort would not be a prudent investment in resources because of the absence of the socioeconomic conditions that are needed to justify the considerable costs and long time period required to prepare and implement an ICM program. A coastal nation or sub-national unit should not prepare an ICM program if one or more of the following factors does not have a strong influence on its economy and culture:

- Coastal dependent fisheries and fishers,

- Mariculture or mariculture development potential,

- Coastal tourism (international) and recreation, and/or the potential for international coastal tourism,

- Mangrove forestry,

- Coastal environments (e.g. wetlands, estuaries or coral systems) of international importance (such a important habitats for migratory birds, rare and endangered species, and areas of exceptional biodiversity) and,

- Coastal hazards.

Of course, the compelling socioeconomic and political importance of CZM to a nation or sub-national unit increases both with the number of factors and the relative political and socioeconomic importance of each factor.

In a number of developing nations, political, social, and economic conditions (such as civil strife/war or pandemic corruption) reduce the governance capacity far below the minimum level necessary for ICM.

In most nations or sub-national units, ICM requires democratic institutions for the successful preparation and implementation of a program, particularly if it is to be largely sustained by the nation and/or sub-national unit(s) with their own resources when international donor support is significantly reduced or terminated**.** Democratic institutions are also required if the program is going to use community-based management as an approach for the preparation and implementation of plans, policies, and programs.